

ARGUMENTS AND REMARKS

The above-identified patent application has been reviewed in light of the Examiner's non-final Action dated June 15, 2010. In view of the amendments and arguments presented herein, Applicant respectfully submits that the claims are in condition for allowance.

Claims 1 and 19 have been objected to. Claim 1 has been rejected under 35 USC §103(a) as being unpatentable over WO 01/12440 to Lachowyn ("Lachowyn") in view of DE 3729911 to Braun, et al. ("Braun") and 5,207,153 to Thomason ("Thomason"). Claims 12, 13, and 17-19 have been rejected under 35 USC § 103(a) as being unpatentable over Lachowyn in view of Braun and Thomason as applied to Claim 1, and further in view of Applicant's Admitted Prior Art (AAPA).

Claims 1 and 19 have been amended. Claims 2-11, 14-16, and 20-35 were previously withdrawn or cancelled. Accordingly, Claims 1, 12, 13, and 17-19 are pending.

Interview Summary

An Applicant Initiated Interview was conducted with the Examiner on November 30, 2010. The undersigned thanks the Examiner for his time and guidance. During the interview, the Examiner voiced a concern that Claim 1 did not adequately identify the use of a central controller that employs feedback control, which is believed to distinguish Applicant's invention from the prior art. Also, the Examiner suggested that Claim 1 was indefinite as the relationship between the claimed inkjet printing head and a processing station was not clearly defined. Further amendments to Claim 1 have been made to address these concerns.

Objection to the Claims

The Examiner has objected to Claim 1 and points to the recitation of "predetermined processing stations" as lacking antecedent basis and suggests that the phrase should be changed to "said predetermined number of processing stations." In addition, the Examiner has asserted that the recitation of "an operating frequency of inkjet droplets of an inkjet printing head that is transmitted to a computing unit" is unclear. Applicant have amended Claim 1 as suggested by the Examiner and to specify that the operating frequency of the inkjet droplets is provided to the computing unit. In addition, Applicant has amended Claim 1 to provide that one or more processing stations is configured with an inkjet printing head. It is thus believed that Claim 1 is

now definite.

The Examiner has objected to Claim 19 and points to the recitation of “the signals of said at least one incremental encoders” and the last recitation of “the respective drive means” as lacking antecedent basis. Withdrawal of this objection is requested as Applicant’s have amended Claim 19 to correct these antecedent basis problems.

Claim Rejections Under 35 USC §103(a)

Claim 1

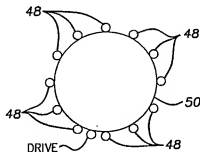
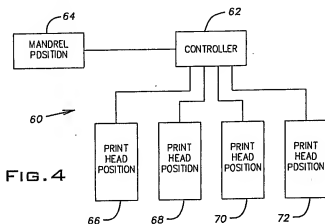
The Examiner has rejected Claim 1 under 35 USC §103(a) as being unpatentable over Lachowyn in view of Braun and Thomason. In order to establish a *prima facie* case of obviousness, the prior art references must teach or suggest all of the claim limitations. Applicant respectfully traverses this rejection as Lachowyn fails to disclose: 1) a machine that provides feedback control for both its turret and rotatable mandrel, and 2) the use of direct, single-sensor feedback for the feedback control of its turret and rotatable mandrel. Further, the combination of Lachowyn, Braun, and Thomason 3) fails to disclose the use of a clock pulse to synchronize a conveying unit and processing unit, 4) fails to teach the coupling of inkjet printing to the frequency of a central, single clock pulse, and 5) fails to disclose use of single-sensor feedback control for both its turret and rotatable mandrel.

1) Lachowyn does not teach feedback control of a conveying unit with processing units

Examiner has failed to show a *prima facie* case of obviousness under 35 USC § 103. In order to establish a *prima facie* case of obviousness pursuant to 35 USC § 103, there must be some suggestion or motivation to modify the reference or to combine the reference teachings, there must be a reasonable expectation of success, and the prior art reference or references must teach or suggest all the claim limitations. (MPEP § 2143). However, all of the elements of the rejected claims cannot be found in the cited references, whether those references are considered alone or in combination. In particular, Lachowyn does not teach, suggest or describe feedback control of a conveying unit with processing units. Accordingly, reconsideration and withdrawal of the rejection of Claim 1 as obvious is respectfully requested.

Lachowyn discloses an apparatus (10) for offset printing using a turret (14), mandrels (16), and print heads (18). Lachowyn teaches loading articles (20) onto mandrels (16) for

precision offset printing of the articles (20) by the print heads (18). The rotational position of each print head (18) is maintained and controlled by a controller (60) through sensors (66, 68, 70, 72). (pg. 3, ll. 14-34 and Fig. 4 provided below). However, the controller of Lachowyn only operates to control the position/registration of the article (20) being printed by controlling the mandrel position (64). The controller (60) makes no attempt to control the rotating turret (14). See Fig. 4. The mandrels are simply “driven by planetary gears 48 engaging a ring gear 50 rotating with respect to the turret 14” (pg. 3, ll. 6-8, also Fig. 3 inserted below). As Lachowyn states, “the control system 60 automatically establishes and maintains registration [of the print position of the articles] *independently* of the mean article diameter and rotation speed of the mandrels.” (pg.



Unlike Lachowyn, embodiments of the claimed invention operate with integrated feedback control of its processing stations and conveying unit through a central controller. Deliberate and integrated control of the conveying unit and processing stations, as contemplated, enables benefits such as reduced manufacturing tolerances and reduced fluctuations of the movement of the rotating conveying unit.

Furthermore, Lachowyn not only does not disclose controlling of its rotating turret/conveying unit with a controller, it specifically teaches away from such control. Lachowyn deliberately does not employ its controller (60) to control the rotation speed of the mandrels, as quoted above (pg. 3, ll. 32-34), so that the controller is independent of the mean article diameter and the rotation speed of the mandrels as determined by the rotation speed of the conveying unit.

Nonetheless, to facilitate prosecution, Claim 1 has been amended to more explicitly identify that the central controller controls, through a feedback control loop, both the processing movements of its conveying unit and controls, through a feedback control loop, the processes of its processing stations.

Therefore, because Lachowyn does not teach, suggest or describe the closed-loop control of a conveying unit with processing units, and Braun and Thomason fail to address the deficiencies of Lachowyn, the Examiner's rejection of Claim 1 should be withdrawn.

2) Lachowyn does not teach use of direct, single-sensor feedback for feedback control of processing units

The Examiner has failed to show a *prima facie* case of obviousness under 35 USC § 103. More specifically, Lachowyn does not teach, suggest or describe securing or maintaining the use of direct, single-sensor feedback for feedback control of processing units. Accordingly, reconsideration and withdrawal of the rejection of Claim 1 as obvious is respectfully requested.

Lachowyn discloses use of a controller (60) that receives signal inputs from each of the multiple processing stations and outputs multiple signals to each of the multiple processing stations to maintain registration (i.e. to maintain control) of its processing stations. Specifically, "using the signals from the sensors 64, 66, 68, 70, 72 the controller provides control signals to each servomotor 52 to maintain registration for the blanket 46 at each print position with the article 20 being printed." (pg. 3, ll. 26-29). Further, the Examiner admits that the Lachowyn controller outputs multiple control signals to each servomotor to control each processing station (see Office Action of June 24, 2009, pg. 3). Consequently, in Lachowyn, each of its processing stations must input multiple signals from its central computer, interpret and incorporate those signals, and then output a signal to its processing units for control. Such activity results in additional complexity, additional signal noise, system lag, and inaccuracies.

In contrast, in one embodiment of the claimed invention a Lachowyn-like controller that sends multiple signals to each of its processing stations for positional control is not employed. Instead, the central controller presets a lead frequency that defines a clock pulse that is used to both control the processes of the processing stations and to control the processing movements of the conveying unit. This simplified and uniform control technique enables more exacting activation of the processing stations in that it eliminates the additional processing lag, signal noise, and complexity inherent when multiple signals for each processing station are sent by a central controller for local downstream control at each processing station, as done in Lachowyn.

Nonetheless, to facilitate prosecution, Claim 1 has been amended to more explicitly to identify that the central controller controls, through a feedback control loop, both the processing movements of its conveying unit and controls, through a feedback control loop, the processes of its processing stations.

Therefore, because Lachowyn does not teach, suggest or describe the use of direct, single-sensor feedback for feedback control of processing units, and Braun or Thomason fail to address this deficiency, the Examiner's rejection of Claim 1 should be withdrawn.

3) The combination of Lachowyn, Braun, and Thomason fails to teach the use of a clock pulse to synchronize a conveying unit and processing unit

The Examiner has failed to show a *prima facie* case of obviousness pursuant to 35 USC USC § 103. The combination of Lachowyn, Braun, and Thomason fails to teach the use of a clock pulse to synchronize a conveying unit and processing unit. Accordingly, reconsideration and withdrawal of the rejections of Claim 1 as obvious is respectfully requested.

The Examiner has acknowledged that Lachowyn does not teach to synchronize the operations of a conveying unit and processing stations by use of a clock pulse whose starting signals are generated by a central controller. The Examiner has applied Braun as disclosing use of a central controller to achieve register control among the processing stations and the transport device. However, Braun simply does not teach nor enable use of a controller in this manner, nor does it teach or suggest synchronization through a clock pulse generated by a central computer.

Braun discloses a scheme to synchronize operation among processing stations to replace toothed-wheel gears. No teaching or suggestion of synchronization of those processing stations with a conveying unit is provided. Furthermore, the synchronization of the processing stations is

performed by evaluating pulses generated from the individual incremental transmitters on the individual processing stations as against pulses generated from a central clock pulse. Such a difference controller does not teach a single-source clock pulse from a central computer pulse, as contained in embodiments of Applicant's invention.

In contrast, embodiments of the claimed invention employ a central controller which singularly generates a clock pulse for integrated, synchronized control of the conveying unit and the processing stations. Indeed, such use of a single lead frequency as generated by a clock pulse in out central computer enables particularly simple and exacting synchronization of the processing stations and the conveying unit. Also, a start-up procedure is claimed whereby the start and duration of the processing processes at the processing stations are accurately determined. Braun discloses no such start-up procedure involving its difference controller.

Nonetheless, in order to facilitate prosecution, Claim 1 has been amended to more explicitly identify that the central controller synchronizes the processing movements and the processes of the processing stations.

The Examiner has pointed to no suggestion where one skilled in the art would combine the teachings of Lachowyn with Braun and/or Thomason, except from using Applicant's present invention as a template and through hindsight reconstruction of the present claims. Rejections on obviousness grounds cannot be sustained by mere conclusory statements. Rather, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Therefore, the Examiner's rejection of Claim 1 should be withdrawn.

4) The combination of Lachowyn, Braun, and Thomason fails to teach the coupling of inkjet printing to the frequency of a central, single clock pulse

The Examiner has failed to show a *prima facie* case of obviousness pursuant to 35 USC § 103. More specifically, the combination of Lachowyn, Braun, and Thomason fails to teach the coupling of inkjet printing to the frequency of a central, single clock pulse. Accordingly, reconsideration and withdrawal of the rejections of Claim 1 as obvious is respectfully requested.

The Examiner has acknowledged that Lachowyn does not teach the coupling of inkjet printing to the frequency of a central, single clock pulse. The Examiner has applied Thomason as disclosing use of a inkjet printing for applying ink to rotating objects. However, Thomason fails to teach the coupling of inkjet printing to the frequency of a central, single clock pulse, as invented by the Applicants.

Thomason is generally related to an apparatus for applying printed matter to objects. Thomason provides no teaching specific to inkjet printing heads and no teaching that relates inkjet printing head operations to the frequency of a central, single clock-pulse.

Indeed, Thomason teaches away from coupling the inkjet printing to the frequency of a central, single clock pulse. Thomason teaches to eliminate relative movement between the printing head and the surface of the object to be decorated (col. 3, ll. 38-42). In order to achieve this, Thomason discloses that the printing heads oscillate with a rate of reciprocation that is equal to the tangential velocity of the outer surface of the object to be printed upon when rotated, thus presenting a relatively stationary surface for printing upon. (col. 3, ll. 9-15 and 18-21). There is no disclosure or suggestion for synchronizing the rotation of the objects with the processing station depending on an operating frequency of the ink-jet droplets.

Therefore, the Examiner has pointed to no suggestion where one skilled in the art would combine the teachings of Lachowyn with Thomason or Braun, except from using Applicants present invention as a template and through hindsight reconstruction of the present claims. Rejections on obviousness grounds cannot be sustained by mere conclusory statements. Rather, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Therefore, the Examiner's rejection of Claim 1 should be withdrawn.

5) The combination of Lachowyn, Braun, and Thomason fails to disclose use of single-sensor feedback control for both its turret and rotatable mandrel

The Examiner has failed to show a *prima facie* case of obviousness pursuant to 35 USC § 103. More specifically, the combination of Lachowyn, Braun, and Thomason fails to teach use of single-sensor feedback control for both its turret and rotatable mandrel. Because the Examiner has pointed to no suggestion where one skilled in the art would combine the teachings of Lachowyn with Thomason or Braun, except from using Applicant's present invention as a template and through hindsight reconstruction of the present claims, to teach use of single-sensor feedback control for both a turret and rotatable mandrel, reconsideration and withdrawal of the rejections of Claim 1 as obvious is respectfully requested.

Claims 12, 13, 17-19

The Examiner has rejected Claims 12, 13, and 17-19 under 35 USC §103(a) as being unpatentable over Lachowyn in view of Braun and Thomason as applied to Claim 1, and further in view of Applicant's Admitted Prior Art (AAPA). Applicants respectfully traverse these rejections, in turn with separate arguments, because the combinations as asserted by the Examiner do not teach or suggest all of the claim limitations.

Claim 12

The Examiner rejects Claim 12 as being unpatentable over Lachowyn in view of Braun and Thomason, and further in view of Applicant's Admitted Prior Art (AAPA). The examiner admits that the Lachowyn in view of Braun and Thomason combination does not teach the use of incremental encoders for measurement and transmission of the rotary positions of the processing units. The Examiner asserts such use of incremental encoders is either 1) taught as conventionally used by AAPA, or 2) obvious to one skilled in the art. The use of incremental encoders for measurement and transmission of the rotary positions of the processing units is not taught by the AAPA nor is it obvious to one skilled in the art.

AAPA does not teach the use of incremental encoders as conventionally used. As explained on page 1, ll. 20-37 through page 2, ll. 3, even though incremental encoders *may* have been previously used, Applicant's have identified problems with prior uses of incremental encoders. More specifically, Applicant's have identified that prior uses of incremental encoders had disadvantages such as difficult signal transmission, transmission delay, and transmission fluctuations. As such, embodiments of the claimed invention are directed to ameliorating the identified disadvantages. In particular, in one embodiment of the present invention, because a clock pulse is used to synchronize the conveying unit and the processing station, starting signals are generated so that individual processing stations are capable of starting independently. When the duration of the transmission of the clock pulse has been predetermined, fluctuations in the information transfer from the central controller can be eliminated; thus, leading to increased product quality.

Furthermore, it is not obvious to one skilled in the art to use incremental encoders for measurement and transmission of the rotary positions of the processing units. Therefore, the examiner has pointed to no suggestion where one skilled in the art would combine the teachings

of Lachowyn, Braun, Thomason, and the AAPA except from using Applicants present invention as a template and through hindsight reconstruction of the present claims. If the Examiner is making such conclusion based on his own knowledge, rather than material explicitly stated in the cited prior art references, Applicant respectfully requests an Examiner's Affidavit under 37 CFR 104(d)(2), and reserves the right provided under such section to submit counter affidavits, all prior to the Examiner making the present case final.

Claims 13, 17, 18, and 19

The Examiner rejects Claims 13 and 17, 18, and 19 as being unpatentable as modified by the applied prior art. Because Claims 13, 17, 18, and 19 depend from allowable independent Claim 1, the rejections of Claims 13, 17, 18, and 19 should be withdrawn.

Conclusion

Based on at least the foregoing, Applicant believes that all pending claims are in condition for allowance and such disposition is respectfully requested. Applicant also respectfully traverses the remainder of the Examiner's assertions as to what is disclosed in and/or taught by the cited prior art. That is, since the amendment and arguments made herein are believed to sufficiently address the rejections, any assertions by the Examiner which are not specifically addressed are not admitted as true. Furthermore, any arguments concerning motivation to combine, rationale to combine, etc. and not specifically provided in this response are not waived.

In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned attorney at the Examiner's earliest convenience.

Respectfully submitted.

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